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tinents. His work was done in Bohemia, and his collections filled to overflowing the spacious apartments of his mansion in Prague, where he lived simply and unostentatiously, devoting his fortune to the preparation of the plates and text of his works, which he distributed with a princely hand. He belonged in every sense to the old régime. Faithful to the memory and interests of his royal master and to monarchist principles, he was inflexible in his adherence to Cuvierian ideas in biology, in his opposition to transmutation views, though his own striking series of intermediate fossil forms, in other hands, will bear another interpretation than he gave to them; but to whoever this task may fall, he could not discuss their relations to theories of descent with more gentle, suave firmness and less appearance of dogmatism than Barrande showed in his opposition to the newer views. One more link which bound the old and new school in biological science has died in the fullness of years and honors.

— Professor Oswald Heer died at Zurich, Sept. 27. He was born in 1809 near St. Gallen; in 1834 he became a privatdocent for botany and entomology in the University of Zurich, where in 1836 he was appointed professor and director of the botanic garden. Since the year 1853 his continuous series of researches in fossil plants have made his name famous. His works on the fossil plants of Greenland and Spitzbergen were notable, also his extended work and papers on fossil insects. His best known book, *The Primeval World of Switzerland*, in two volumes, was translated into English. It will always occupy an important place in a scientific library.

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PROCEEDINGS OF SCIENTIFIC SOCIETIES.

BIOLOGICAL SOCIETY OF WASHINGTON, Oct. 19.—Papers were read by Dr. Thomas Gill on the ichthyological results of the explorations of the U. S. Fish Commission steamer *Albatross* in 1883; by Dr. C. A. White on the character and function of the epiglottis of the bull snake (*Pityophis*); by Professor Lester F. Ward on an interesting botanical relic of the District of Columbia, and by Dr. C. V. Riley on manna in the United States.

Nov. 2.—Communications were read by Dr. George M. Sternberg, U.S.A., on Micrococci; by Dr. E. M. Schaeffer on further remarks on Manna, with exhibition of specimens; by Dr. T. H. Bean on arrested asymmetry in a flounder, with exhibition of specimens, and by Professor Lester F. Ward on Mesozoic dicotyledons.

NEW YORK ACADEMY OF SCIENCES, Oct. 15.—The meetings are now held in the new building of Columbia College, 49th street and Madison avenue. The following communications were announced: On the strata of indurated shales between Bergen hill

and the Palisades, N. J., by Mr. Nelson H. Darton; The Trenton (N. J.) gravels and their contained implements, as bearing on the antiquity of man, by Professor Daniel S. Martin.

Oct. 22.—Observations made during the past summer were expected from several members, including Notes on the Copper-mining region of Lake Superior, by Dr. N. L. Britton, and reports by others upon points of interest at the Minneapolis meeting of the American Association for the Advancement of Science.

Oct. 29.—The following paper was announced: The relative soil-exhaustion by the sugar-cane crop, by Dr. A. R. Ledoux; Mr. George F. Kunz exhibited some interesting minerals.

BOSTON SOCIETY OF NATURAL HISTORY, Oct. 17.—Dr. C. S. Minot discussed the histology of the skin of insects, and Mr. W. O. Crosby spoke of the "Purgatory" in Sutton, Mass.

ACADEMY OF NATURAL SCIENCES, Philadelphia, May 24.—In answer to Professor Heilprin, Professor Lesley said that the geological world was by no means unanimous with respect to glaciation. No one could say that the movement of ice was from one center, or that that center was in the far north. The Alps had no center of glaciation. There was no foundation in fact for Dana's theory of the relations between continents and oceans. Professor Heilprin replied that the Alps themselves were a center of glaciation.

June 1.—Dr. Leidy spoke of a human bone found in a ravine at Natchez along with bones of Mastodon and Megalonyx. As there are Indian graves near, it was quite possible that the human bone, which was lowest, may have been washed from the soil at the top of the cliff, while the mammals came from a lower position. Yet if the bone had not been human, no one would have thought of such a solution, and the Natchez loam was not older than the alluvium of the Somme, in which human implements have been found with bones of the mammoth. If proof of contemporaneity were forthcoming, it would indicate the existence of man in North America a thousand centuries ago. Professor Cope detailed the results of two days' fishing in the Batsto river, N. J. The fauna of the region is Carolinian. Twelve species of fishes were obtained, seven of which were confined to the Carolinian fauna, and six to New Jersey and Delaware.

June 7.—Miss Foulke described the artificial reproduction of *Actinosphaerium*. If broken up, the protoplasm of this rhizopod gathers into globular masses, each of which develops into an *Actinosphaerium*. While the natural method of reproduction requires seven to fourteen days, the artificial needs but one or two days. The Rev. Dr. McCook spoke of the habits of *Mygale hentsii* in captivity. In the winter it was inactive but not quite torpid. It dug, and made the earth scratched up by its palps

and anterior legs into soft balls with a liquid from its mandibles, but it made no nest. The molting of another species of *Mygale* was described. The skin broke along the middle line of the body, and the legs were pulled out by spasmodic efforts, while the spider lay on its back or side. The insect had great difficulty in freeing the limbs of the other side, and broke off two in the attempt, a result which shows that not all the maimed spiders found are so from the attacks of enemies. A large black spider from San Diego, said to be very venomous, and to be in the habit of collecting the cocoons of other individuals of the same species, was exhibited, also a new form of *Argiope*, for which the name *argentiola* was proposed. Professor Heilprin called attention to Dr. Dahl's opinions respecting the organ of hearing in spiders, and Dr. McCook remarked that he had never been able to convince himself that spiders have the faculty of hearing, and would require further information before he would adopt Dr. Dahl's conclusions as to its residence in the sensory hairs on the legs.

June 14.—A report on the habits and manners of the English sparrow was presented by Mr. T. G. Gentry in answer to a note of enquiry from the Concordville Farmers' Club. Professor Cope stated that several species of invertebrates from the Laramie beds of Dakota had recently been determined by Dr. White to be of the Miocene period, although the evidence of the vertebrates is still in favor of the Cretaceous age of the beds. Some fossil fishes had been found in the beds of shale lying conformably with the Laramie beds. On stratigraphical evidence these beds seemed to belong to the horizon of the Green River shales, but the remains of fishes are not closely allied to those found in the latter beds. A genus named by the speaker *Plioplarchus* is quite closely related to forms now existing. There was no evidence that the land fauna of the Laramie beds was Cretaceous, and the marine fauna Tertiary. The formation containing the Cernaysienne fauna in France was believed to be nearest in geological age to the Laramie. As the age of the American formation was first determined, the name should be applied to the French deposits. Professor Heilprin maintained the Eocene age of the Laramie. The beds of Maryland and Eastern Virginia contain forms near to those of the lowest English and French Tertiary, and have extensive beds of lignite similar to those of the Laramie. Professor Allen spoke of the distribution of the cutaneous nerves in mammals. The position of conspicuous tufts of hair was accompanied by an increased development of cutaneous nerves, though the relation was not so definite as in birds. Mr. Ashburner stated that the Allegheny oil sands of New York were of the same horizon as the Bradford sands of Pennsylvania, so that it would be useless to sink wells in the intervening tract. Investigations extended into Livingston, Steu-

ben and Wyoming counties, N. Y., established the belief that these sands belonged to the Lower Chemung. The oil in Pennsylvania never reaches the reservoirs from above, but principally from below, though some of the material was formed from plants contained in the beds themselves. Mr. B. S. Lyman, late chief of the Geol. Survey of Japan, stated his belief that oil always originates in the sand where it is found.

June. 21.—Professor Cope gave an account of the fossil fishes from the Idaho and Oregon lake basins. Twenty-two species were now known from Idaho, all distinct from those found in the Oregon basin, and distinct from existing species, though, with two exceptions, they belonged to existing genera. Among these fishes was a member of the Cobitidæ, a family not now represented in North America. The name of Idaho lake and Idaho deposits was proposed for the Pliocene beds of Idaho. No remains of mammals and very few of any vertebrates but fishes were found in the Idaho beds, though the Oregon deposits are full of bird remains. The Rev. Dr. McCook exhibited a nest of *Tarentula arenicola*.

Aug. 31.—Mr. Meehan, recently returned from a trip to Alaska, stated his conclusion, from the relations of ancient forests of *Abies sitkensis*, and other evergreens, to the drift and superimposed younger forests, that the destruction of the former, the covering of their site with hundreds of feet of drift, and the subsequent exposure of their remains, were all the work of a few hundred years.

Sept. 6.—Mr. Meehan spoke of the abundant exudation from the cones of *Abies sitkensis*, and expressed his belief that honey-dew was in most cases an exudation from the flowers and leaves of plants. Sachs had suggested that its function in the arbor vitæ, was to catch the wind-blown pollen, but this could not be the case in plants of other classes that also produce it. The Rev. Dr. McCook remarked that the honey-dew of aphides was an excretion, as the drop always appeared at the anus. That the source of the honey was vegetable, he had proved in the case of the honey-ant of Colorado, which collects the liquid from the galls of the scrub oak.

Sept. 13.—Mr. Meehan called attention to the flowers of *Centaurea americana*, a native of Texas. If the point of the united stamens be touched, the pollen will overflow and the pistil rises above the stamen-tube. If now the pistil be touched, the entire floret bends to the side or makes a circular motion, and sometimes the motion is communicated to other florets. The motion is only observed when the pollen is present.

Sept. 20.—Mr. Meehan referred to the remarks of Dr. Horn, at one of the summer meetings, respecting a species of grass which yields so abundant a supply of sugar that the natives collect it by brushing the hands over it. The plant is a *Carex*, and

is called Ce-we-be by the Indians. The age of the great examples of *Sequoia gigantea* was proved by the verticels of the branches as well as by the rings of wood, to be at least 2000 years. Young Sequoias of this species are abundant at 8000 feet, though scarce below, indicating that at this elevation the species was probably in its natural condition.

AMERICAN PHILOSOPHICAL SOCIETY, April 6, 1883.—Mr. Davis read a paper on the conversion of chlorine into hydrochloric acid, as observed in the deposition of gold from its solution by charcoal. Professor W. E. Claypole communicated two papers entitled, "On the Kingsmill white sandstone," and "Note on a large fish-plate from the Upper Chemung (?) beds of Northern Pennsylvania." The plate belongs to *Pterichthys* or some related genus, and the species is provisionally named *Pterichthys rugosus*. Mr. Lockington read a paper entitled, "The role of parasitic prophytes; are they the primary or the secondary cause of zymotic diseases."

NATIONAL ACADEMY OF SCIENCES, New Haven, Nov. 13-16.—The meetings, which extended through four days, were well attended, a large proportion of the members being present. The following papers were read:

1. Upon the formation of a deaf variety of the human race. A. Graham Bell.
2. On the Solar Eclipse of May 6, 1883. Reports by C. A. Young, E. S. Holden and C. S. Hastings.
3. Notes on the Mass of Saturn. A. Hall.
4. The Animikie rocks of Lake Superior. T. Sterry Hunt.
5. On some new primary cleavage forms of albuminous matter. R. H. Chittenden. (By invitation.)
6. On the use of the word "Light" in Physics. S. Newcomb.
7. On the subsidence of particles in liquids. W. H. Brewer.
8. On a new photograph of the Solar Spectrum. H. A. Rowland.
9. On the theory of errors of observation and probable results. S. Newcomb.
10. On the stratified drift or terrace formation of the New Haven region, including its kettle holes and deserted river channels. J. D. Dana.
11. Preliminary notice of phospho-vanadates, arsenio-vanadates and antimonio-vanadates. Wolcott Gibbs.
12. On the probable existence of new acids of phosphorus. Wolcott Gibbs.
13. Notes on the mineralogy and lithology of the Bodie mining district of California. B. Silliman.
14. On the ancient glaciation of North America. J. S. Newberry.
15. Marriage institutions in tribal society. J. W. Powell.
16. Atmospheric absorption. S. P. Langley.
17. Note upon the physical aspects of the higher members of the Chemung group and the development and distribution of the fossil genera *Ptychopteria* and *Leptodesma*, preceded by a review of the *Pectenidae* and *Aviculidae* of the Devonian system. James Hall.
18. Personality in the measures of Venus's diameter as derived during transit across the sun. O. T. Sherman. (By invitation.)
19. The reduction of barometric observations to sea-level. Elias Loomis.